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GEOPHYSICAL ABSTRACTS

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DEPARTMENT OF COMMERCE - BUREAU OF MINES

GEOPHYSICAL ABSTRACTS[1]

No. 29

Compiled by Frederick W. Lee[2]

1. Patents (Gravitational and Magnetic methods)

List of contributing editors of Geophysical Abstracts:

Ayvazoglou, W., U. S. Bureau of Mines, Department of Commerce, Washington, D. C.
Barton, Dr. D. C., Petroleum Building, Houston, Tex.
Belluigi, Dr. Arnaldo, Corso Vittorio Emanuele 178, Parma, Italy.
Bogoiavlensky, Prof. L., Central Chamber of Weights and Measures, Leningrad, U. S. S. R.
Eckhardt, Dr. E. A., 327 Craft Ave., Pittsburgh, Pa.
Eve, Dr. A. S., McGill University, Montreal, Canada.
Gish, Dr. O. H., Carnegie Institution, Broad Branch Road, Washington, D. C.
Gorsky, Eng. V., Allatini Mines (Ltd.), Skoplie B.p.134, Yugoslavia.
Hartley, Kenneth, 2404 San Jacinto St., Houston, Tex.
Hutchinson, Prof. W. Spencer, Mass. Institute of Technology, Cambridge, Mass.
Jenny, Dr. W. P., Magnolia Petroleum Co., Dallas, Tex.
Karcher, Dr. J. C., Dallas, Tex.
Keys, Dr. D. A., McGill University, Montreal, Canada.
Knappen, Dr. R. S., Gypsy Oil Co., Tulsa, Okla.
Land, Prof. Alfred C., Tufts College, Boston, Mass.
Lee, Dr. F. W., U. S. Bureau of Mines, Department of Commerce, Washington, D. C.
Leonardon, E. C., 25 Broadway, New York City.
Numerov, Prof. Dr. B. V., Fontanka 34, Leningrad, U. S. S. R.
Petrowsky, A., Wasilly Ostrov, 21 Linia No. 8-A, Leningrad, U.S.S.R.
Roman, Dr. I., 90 Valley Way, West Orange, N. J.
Ruark, Dr. A. E., University of Pittsburgh, Pittsburgh, Pa.
Scholl, Louis A., Box 1805, Houston, Tex.
Shaw, Dr. H., The Science Museum, South Kensington, London, S.W.7.
Sundberg, Dr. Karl, Swedish American Prospecting Corporation, 26 Beaver St., New York City.
Truemann, O. H., Humble Oil Co., Houston, Tex.
Van Orstrand, Dr. C. E., Interior Building, Washington, D. C.
von Weelden, Dr. A., De Bataafsche Petr. Mij. 30 Card van Bylanttlaan, The Hague, Holland.
Weaver, Paul, Drawer C, Houston, Tex.
Wright, Dr. F. E., Carnegie Institution, Washington, D. C.
Zuschlag, Dr. Theodor, Swedish American Prospecting Corp., 26 Beaver St., New York City.

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2 Senior physicist, U. S. Bureau of Mines.

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This information circular contains abstracts, by W. Ayvazoglou, from original German patents concerning gravimetrical and magnetic methods of geophysical prospecting.

Copies of the patents listed in this circular may be procured from Deutsches Reich, Reichspatentamt, Berlin, Germany.

1. GRAVITATIONAL METHODS

(352) EÖTVÖSSCHE DREHWAAGE
(Eötvös' Torsion Balance)

Werkstätten für Präcisions - Mechanik und Optik
Carl Bamberg, of Berlin-Friedenau.

343,620 Patent issued November 5, 1921.

The invention disclosed in this patent concerns the recording apparatus which is secured on the top of the vertical protecting box. By a special arrangement the light ray reflected by the mirror suspended from the filament i conducted vertically upward by means of an additional mirror, and can be observ through a window.

Claims allowed - 3.

(353) EÖTVÖSSCHE DREHWAAGE
(Eötvös' Torsion Balance)

(Addition to patent 343,620)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau, of Berlin-Friedenau.

372,133 Patent issued March 24, 1923.

This patent concerns an improved means of conducting the light ray, as described in the original patent 343,620.

According to this patent the light ray is projected first to a mirror secured as low as possible and then reflected by another mirror to the recording apparatus situated at the top of the protecting box.

Claims allowed - 2.

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(354) EÖTVÖSSCHE DREHWAAGE
(Eötvös' Torsion Balance)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau, of Berlin-Friedenau.

378,323 Patent issued July 10, 1923.

The invention disclosed in this patent is an arrangement by which the locking device and the trip gear mechanism serving for the rotation of the balance is connected to a braking or locking device of the driving mechanism in such a way that they both work simultaneously, thus causing the driving mechanism to stop as soon as the rotation of the instrument is locked.

Claims allowed - 2.

(355) EINRICHTUNG ZUM MESSEN VON WINKELAUSSCHLAGEN
(Arrangement for measuring angles of deflection)

Gesellschaft für praktische Geophysik m. b. H. of Freiburg i. Br.

385,787 Patent issued December 12, 1923.

An arrangement is described for measuring angles of deflection by means of a mirror and a graduation scale in geophysical-survey instruments, such as torsion balances, in which the graduation scale is fixed to the telescope above the tube; a cut-away section of the telescope tube in front of the objective makes possible the passage of the light rays, emanating from the scale through the objective to the mirror and back to the eye.

Claims allowed - 2.

(356) EINRICHTUNG ZUR RELATIVEN SCHWEREMESSUNG
(Arrangement for relative gravity measurement)

Dr. Wilhelm Hammer of Freiburg i. Br.

391,777 Patent issued March 11, 1924.

This patent discloses an arrangement in which the periods of oscillation of two or more pendulums assigned for relative gravity measurements are transmitted by radio. According to this invention, the pendulums, the periods of oscillation of which are to be compared, are connected to oscillatory circuits, the emission of waves of which during an oscillating phase of pendulums is suddenly changed; this makes possible the noting of coincidences at the places of observation.

Claims allowed - 2.

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(357) DREHWAAGE
(Torsion Balance)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau, of Berlin-Friedenau

394,876 Patent issued April 29, 1924.

The purpose of the invention described in this patent consists of making t time during which the oscillating beam comes to rest adjustable according to circumstances. The damping device serving for this purpose is described.

Claims allowed - 2.

(358) EÖTVÖSSCHE DREHWAAGE
(Eötvös' Torsion Balance)

Askania-Werke A.-G., vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau, of Berlin-Friedenau.

395,397 Patent issued May 16, 1924.

The Eötvös torsion balance described in this patent is characterized by an arrangement in which the influence of changes of temperature and of radiation is removed by filling the external casings protecting the balance with soft feathe these casings serve at the same time for protecting the balance during transportation.

Claims allowed - 4.

(359) DREHWAAGE ZUR MESSUNG DER SCHWERKRAFT
(Torsion Balance for Measuring Gravity)

Askania-Werke A.-G., vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau, of Berlin-Friedenau.

396,181 Patent issued May 27, 1924.

This patent discloses an invention in which the beam of the balance is made of a new form so that one of the weights is disposed below and the other above the horizontal plane passing through the point of suspension. By this arrangement the height of the instrument can be reduced.

Claims allowed - 3.

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(360) GRAVITATIONSWAAGE NACH ART DERJENIGEN VON EÖTVÖS
(Torsion Balance of Eotvos Type)

Gesellschaft fur praktische Geophysik m. b. H. in Freiburg i. Br.

413,284 Patent issued May 7, 1925.

The torsion balance of Eötvös type described in this patent discloses an invention by which the variability of the twisting force is eliminated by producing in the torsion balance directing forces based on magnetic, electrical, or mass attraction. By this the external influence upon the suspension fibre—for example, that of temperature—is also excluded.

Claims allowed - 2.

(361) EINRICHTUNG ZUM MESSEN KLEINER KRÄFTE
(Arrangement for Measuring Small Forces)

"Exploration" Boden-Untersuchungs und Verwertungs-G. m. b. H. of Charlottenburg.

416,319 Patent issued July 11, 1925.

The measuring of small forces by means of a balance beam fastened rigidly to a torsion filament, as described in this patent, is characterized by the following special arrangement: The beam is fixed to the upper part of the filament; the lower part of the torsion filament is secured to a rod, the ends of which are inserted into special guides allowing the rod to be moved in vertical direction only. The same rod serves for keeping the filament tight.

Owing to this arrangement the height of the whole instrument is reduced considerably.

Claims allowed - 3.

(362) EÖTVÖSSCHE DREHWAAGE
(Eotvos Torsion Balance)

"Erda" A.-G., Institut für Angewandte Geophysik of Göttingen.

418,348 Patent issued August 31, 1925.

The invention disclosed in this patent is characterized by the suspension of the beam to a unicrystal filament—for example, a tungsten wire.

Claims allowed - 1.

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(363) TORSIONSAUFHÄNGUNG
(Torsion suspension)

"Erda" A.-G. of Göttingen

421,726 Patent issued November 17, 1925.

This patent discloses a torsion suspension as follows: The filament passes through a hollow cylinder made from a soft metal—for example, lead; the cylinder is inserted into a clamping screw; the suspension wire can be held fast by applying a screw.

Claims allowed - 1.

(364) DREHWAAGE
(Torsion Balance)

"Erda" A.-G. of Göttingen.

421,727 Patent issued November 17, 1925.

This patent describes an arrangement by which the damping of the oscillation of the beam is obtained by using the air; for this purpose the weights are placed between two damping plates. The position of these plates, thus the amount of damping, can be regulated by means of special guide screws.

Claims allowed - 4.

(365) DREHWAAGE ZUR FESTSTELLUNG NUTZBARER LAGERSTÄTTEN
(Torsion Balance for the Determination of Ore Deposits)

Dr.-Ing. Heinrich Quiring of Falkensee b. Spandau.

423,312 Patent issued December 24, 1925.

The torsion balance for the determination of ore deposits and other gravity disturbances under the ground, as well as above it, described in this patent, is characterized by an arrangement by which the deflections of the balance beam are established by magnetic or electrical potential differences occurring between the balance beam, suspension wires of the weights, and the weights on the one side, and the nonconductors or conductors of the form of a tube, ring, box, or plate enclosing them on the other side.

The measurements of the deflections of the beam are made by means of a plate condenser.

Claims allowed - 2.

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(366) VERFAHREN FÜR SCHWEREMESSUNGEN NACH EÖTVÖS
(Method of Gravity Measurements according to Eötvös)

Dr. Karl Kilchling of Freiburg i. Br.

427,530 Patent issued April 9, 1926.

This patent discloses a method of gravity measurements according to Eötvös in which the torsion balance is very slowly rotated without interruption by means of a precision watch. During this constant mechanical rotation the ocular or photographic observation can be carried out in as many azimuth positions as desired.

Claims allowed - 1.

(367) PLATTEN KONDENSATOR ZUM BESTIMMEN VON MASSEN GRAVITATIONSWIRKUNGEN
(Plate condenser for determining the gravitational effects of masses)

Dr.-Ing. Kurt Emil Dittmann of Gelsenkirchen.

428,499 Patent issued May 14, 1926.

This patent describes a plate condenser assigned for determining the excess or deficiency of mass under the ground or inside of other bodies; the invention is characterized by making the condenser rotatable around a horizontal and a vertical axis so that it can be adjusted to any position of the angle; the direction, as well as the various strengths of the effects by which the movable condenser plate is influenced according to the laws of mass attraction, can be measured.

Claims allowed - 1.

(368) VERFAHREN ZUR VERSTÄRKUNG DER DREHWAAGENAUSSCHLÄGE DURCH RESONANZ
(Method for amplifying the deflections of the torsion balance beam by resonance)

Dr. Karl Kilchling of Freiburg i. Br.

428,500 Patent issued May 5, 1926.

The method for amplifying the deflections of the torsion balance beam by resonance, described in this patent, concerns an arrangement by which the period of time of uniformly rotating balance and the torsion oscillation of the suspension are mutually adjusted.

Claims allowed - 1.

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(369) METALLDRAHTAUFHÄNGUNG FÜR MESS-INTRUMENTE INSBESONDERE FÜR LREHWAAGEN
(Metal-wire suspension for measurement instruments, especially for torsion balances)

Käte Heckmann of Freiburg i. Br.

428,824 Patent issued May 14, 1926.

This patent discloses a metal-wire suspension for measurement instruments, especially for torsion balances, characterized by providing the part of the instrument enclosing the suspension wire with a heating device which can be used for tempering the suspension wire.

Claims allowed - 1.

(370) VERFAHREN UND VORRICHTUNG ZUR FESTSTELLUNG NUTZBARER LAGERSTÄTTEN UND SONSTIGER SCHWERESTÖRUNGEN DURCH LOTABWEICHUNGEN
(Method and apparatus for locating useful deposits and determining gravity disturbances by means of plumb-line deviations)

Dr.-Ing. Heinrich Quiring of Falkensee b. Spandau.

429,034 Patent issued May 17, 1926.

The method for locating ore deposits or determining gravity disturbances above the ground and under the ground, described in this patent, discloses an arrangement by which the plumb-line deviations are determined by measuring electrical or magnetic potential differences between the plumb line and a conducting or nonconducting body surrounding the plumb line. This body may have a form of a sphere, cylinder, ring, plate, or have a convex shape. The ring or the cylinder is divided into segments, each representing a plate condenser.

Claims allowed - 3.

(371) VORRICHTUNG ZUM BEOBACHTEN DER ÄNDERUNG EINZELNER SCHWERKRAFTS-KOMPONENTEN MITTELS ELEKTRISCHER PLATTENKONDENSATOREN

(Apparatus for observing the change of single gravity components by means of electrical plate condensers)

"Exploration" Boden-Untersuchungs - und Verwertungs G. m. b. H. of Berlin.

430,643 Patent issued June 21, 1926.

The apparatus for observing the change of single gravity components by means of electrical plate condensers, described in this patent, consists of one or several condensers suspended in such a manner that they occupy a position eccentrical with regard to a vertical or horizontal axis of rotation.

Claims allowed - 1.

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(372) HORIZONTALPENDELDREHWAAGE
(Horizontal pendulum torsion balance)

Seismos G. m. b. H. of Hannover

432,022 Patent issued July 22, 1926.

This patent discloses the application of the horizontal pendulums, for example, of Hengler's type, for gravity field investigations. A detailed description of the apparatus is given. In order to reduce the time of observation, two apparatuses placed opposite one another may be used.

Claims allowed - 4.

(373) VERFAHREN FÜR SCHWEREMESSUNGEN NACH EÖTVÖS
(Method of gravity measurements according to Eötvös)

(Addition to patent 427,530)

Dr. Karl Kölchling of Freiburg i. Br.

432,023 Patent issued July 28, 1926.

The method described in this patent differs from that of the original patent 427,530 by an arrangement in which only the suspended part is rotated and the deviation of attraction is observed, with regard to the azimuth of the rotation, during the rotation.

Claims allowed - 4.

(374) VERFAHREN ZUR BESTIMMUNG DER ANZIEHUNG VON MASSEN, INSBESONDERE DER ERDANZIEHUNG

(Method for determining the attraction of masses, especially that by the earth)

"Exploration" Boden-Untersuchungs - und Verwertungs-G. m. b. H. of Berlin

432,130 Patent issued July 28, 1926.

The invention discloses the following method for determining the attraction of masses. A system of bodies of masses is enclosed in a box provided with a pressure meter. The system is subject to changes of position, if the force of attraction under the effect of whichthe masses of the system are is changed. The system is brought then to its original position by the change of the density of the medium in which the system is inclosed. The value of this variation of density can be established by means of a pressure-meter and serves as a basis for determining the change of the force of attraction.

Claims allowed - 3.

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(375) VERFAHREN FÜR SCHWEREMESSUNGEN NACH EÖTVÖS
(Method of gravity measurements according to Eötvös)

(Addition to patent 427,530)

Dr. Karl Kilchling of Freiburg, i. Br.

432,185 Patent issued July 28, 1926.

This addition to the original patent 427,530 discloses an invention by which a light ray is rotated together with the torsion balance; this light ray records the deviation of the attracted suspended part with regard to the azimuth of the uniform rotation. The recording is produced in the form of a curve or the light ray is exposed by a mechanical device at fixed periods of time in such a way that it serves as a time signal by which the elements of the movement of the rotation of the suspended part are recorded.

Claims allowed - 3.

(376) VORRICHTUNG ZUR VERMEIDUNG DES KLEBENS DER GEHÄNGE BEI MESSINSTRUMENTEN, BESONDERS DREWAAGEN

(Arrangement for avoiding the adhesion of the suspension part in measuring instruments, especially torsion balances)

Dr. Johann Koenigsberger of Freiburg i. Br.

432,598 Patent issued August 7, 1926.

This patent discloses a means for preventing the suspension part of a measuring instrument from adhering to other parts with which it makes contact during its oscillation; this result is attained by making the parts which come in contact from hard oxides or sulphides on the one hand and from metals or metallic alloys on the other; owing to this arrangement the parts which come in contact, instead of adhering, repel each other.

Claims allowed - 1.

(377) TEMPERATURSCHUTZ FÜR MESSINSTRUMENTE ALLER ART
(Temperature protection of measuring instruments of all kinds)

Alfred Gawron of Berlin-Wilmersdorf.

436,592 Patent issued November 4, 1926.

The invention discloses a special method of temperature protection; the protection consists of several separated covers having a form corresponding to the parts of the torsion balance or of any other measurement instrument. The covers are made from waterproof material and are provided with openings through which the observations can be made without removing the covers.

Claims allowed - 1.

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(378) GEHÄNGEKLEMMVORRICHTUNG FÜR TORSIONS INSTRUMENTE
(Locking device for the suspension parts of torsion instruments)

Dr. Johann Königsberger of Freiburg i. Br.

437,215 Patent issued November 19, 1926

This patent discloses the construction of a locking device in which the suspension wire remains stretched after the instrument is locked for transportation. By this arrangement, which consists of applying a spring producing a force almost equal to that of the weight of the mass, the change of the position of the zero point after the unloading of the instrument is prevented.

Claims allowed - 1.

(379) DREHWAAGE FÜR AUSFÜHRUNG VON SCHWEREMESSUNGEN
(Torsion balance for carrying out gravity measurements)

"Exploration" Boden-Untersuchungs-und Verwertungs-G. m. b. H. of Berlin.

440,384 Patent issued February 17, 1927.

The torsion balance proposed by the inventor is characterized by placing the rotative driving mechanism, in order to preserve a symmetrical distribution of the mass of the instrument, in a central position--for example, inside of the cylinder of the foot.

Claims allowed - 1.

(380) VERFAHREN ZUR UNTERSUCHUNG DER RÄUMLICHEN DICHTEVERTEILUNG IM ERDINNERN
(Method for investigation of spatial distribution of density inside of the earth)

Seismos G. m. b. H. of Hannover.

441,170 Patent issued March 1, 1927.

In order to obtain greater accuracy in investigating--for example, by torsion balance--of spatial distribution of density in the surroundings of galleries and workings of mines and determining the position of ore deposits the density of which differs from the surroundings, the inventor proposes that the center of gravity of the suspension part of the instrument be brought to that point of the cross section of the gallery in which the forces of attraction of the parts of the masses mutually compensate each other.

Claims allowed - 2.

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(381) FADENLOSE AUFHÄNGUNG VON DREHWAAGEN, HORIZONTAL PENDELN, MAGNETOSKOPEN UND DGL

(Wireless suspension of torsion balances, horizontal pendulums, magnetoscopes, and similar instruments)

Reinhard Reeh of Nanzebach, near Dillenburg.

441,505 Patent issued March 10, 1927.

The patent describes a wireless suspension of torsion balances, etc., accomplished by means of a swimmer immersed in a liquid; the invention is characterized by such a choice of the liquid, of the inclination, and the natur of the surface parts of the swimmer, and of the walls of the receptacle at the level of the liquid, that two different menisci are formed in the circular space between the immovable receptacle and the movable swimmer.

Claims allowed - 10.

(382) MESSINSTRUMENT MIT FLÜSSIGKEITS-DÄMPFUNG

(Measurement instrument with liquid damping)

Dr. Johann Königsberger of Freiburg i. Br.

441,882 Patent issued March 16, 1927.

The liquid damping for measurement instruments described in this patent is characterized by making the suspension wire of the damping body thinner at the place in which the wire crosses the surface of the liquid; by this the effect of the surface tension is lessened considerably.

Claims allowed - 1.

(383) VERFAHREN ZUR BESEITIGUNG STÖRENDER WANDUNGSHOHLRÄUME U. DG. BEI BENUTZUNG DER DREHWAAGE UNTER TAGE

(Method for eliminating disturbing hollow spaces in walls in using the torsion balance underground)

Gesellschaft fur praktische Geophysik m. b. H. of Freiburg i. Br.

443,215 Patent issued April 23, 1927.

This patent discloses a method for eliminating hollow spaces in walls of mines owing to their harmful effect on the measurements made under ground by torsion balance. The inventor recommends filling out these hollow spaces with material the density of which corresponds to that surrounding the hollow space. Sacks filled with such material may be used.

Claims allowed - 2.

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(384) VERFAHREN ZUR BESEITIGUNG STÖRENDER WANDUNGS-HOHLRÄUME UND DGL. BEI BENUTZUNG DER DREHWAAGE UNTER TAGE

(Method for eliminating disturbing hollow spaces in walls in using the torsion balance under ground)

Gesellschaft für praktische Geophysik m. b. H. of Freiburg i. Br.

443,299 Patent issued April 23, 1927.

In this addition to the original patent 443,215, concerning the filling out of hollow spaces in walls in working with torsion balance underground, the inventor states that the filling can be made not only in the form of plane surfaces, as recommended in the original patent, but also in any other form for which the gravity effect may easily be calculated, as for example, the form of a cylinder.

Claims allowed - 1.

(385) VORRICHTUNG ZUR BESTIMMUNG DER ÄNDERUNG DER VERTIKAL-KOMPONENTE DER ATTRAKTIONSKRAFT IN DER VERTIKALRICHTUNG

(Device for determining the variation of the vertical component of gravity of the force of attraction in vertical direction)

Gesellschraft für praktische Geophysik m. b. H. of Freiburg i. Br.

448,003 Patent issued August 6, 1927.

The device for measuring the deviation of the vertical component of gravity, described in this patent, consists chiefly of a beam kept in horizontal position by means of a horizontal wire; the weights are suspended to the ends of the beam at different heights. The local variation of the vertical component of gravity is manifested by the inclination of the beam and is measured by means of a mirror and a telescope. Two beams may be secured to the same wire or to two wires, the weights of the two beams being fixed at opposite heights; both beams are provided with mirrors.

Claims allowed - 3.

(386) DREHWAAGE ZUR MESSUNG DER SCHWERKRAFT
(Torsion balance for measuring gravity)

(Addition to patent 396,181)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg -Friedenau of Berlin-Friedenau.

451,477 Patent issued October 27, 1927

The original patent 396,181 discloses an invention in which the weights are fixed to the ends of the beam, one below and the other above a horizontal

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plane passing through the point of suspension of the beam. The invention described in this additional patent concerns the means by which the rotation of the beam around its own axis, thus causing the tilting of the perpendicular rods to one or the other side, is prevented.

Claims allowed - 7.

(387) DREHWAAGE
(Torsion balance)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau of Berlin-Friedenau.

452,040 Patent issued November 3, 1927.

This patent discloses a combination of a torsion balance with a theodolite. The theodolite may be secured to the torsion balance either between the two casings of the two balance beams, or above the common casing in which the two beams are enclosed. The torsion balance can easily be removed and the theodolite used separately.

Claims allowed - 4.

(388) EÖTVÖSSCHE DREHWAAGE
(Eötvös' torsion balance)

(Addition to patents 343,620 and 372,133)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau of Berlin Friedenau.

453,438 Patent issued December 6, 1927.

This patent concerns an improvement of the recording apparatus described in patents 343,620 and 372,133. In order to prevent the obscurity of the reading caused by the interference of the two light rays reflected by the mirrors, a special arrangement is made by which one of the light rays is screened at the moment when the other ray is used for taking the indication.

Claims allowed - 4.

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(389) VERSCHLUSS FUR FLUSSIGKEITS DAMPFUNGSGEFASS
(Device for closing liquid-damping receptable)

Dr. Johann Königsberger of Freiburg i. Br.

453,720 Patent issued December 15, 1927.

The device for closing liquid-damping receptacles used in measuring instruments (magnetometers, torsion balances) described in this patent, consists of one or several iris diaphragms and a rubber ring through which the wire passes. By closing the diaphragm the rubber ring is compressed, thus preventing the flowing out of the liquid.

Claims allowed - 2.

(390) DREHWAAGE
(Torsion balance)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau of Berlin-Friedenau.

456,039 Patent issued February 15, 1928.

The invention discloses a system of damping by means of electromagnets; the arrangement for producing the damping magnetic field is connected with the torsion balance box; a weight fixed to the horizontal arm serves as a brake copper. The copper weight has the form of a parallelepiped, the longitudinal axis of which is perpendicular to the axis of the beam.

Claims allowed - 3.

(391) GRAVITATIONS-MESSER ZUR MESSUNG DES VERTIKALEN GRADIENTEN DER ERDSCHWERE

(Gravity measuring instrument for measuring the vertical gradient of gravity)

Dr. Wilhelm Schweydar of Potsdam.

456,484 Patent issued February 25, 1928.

The invention concerns an apparatus for measuring the vertical gradient of gravity which is based on the comparison of the bifilar twisting moment of gravity with the torsion moment of a spiral spring. To eliminate the influence caused upon the length of the spiral spring by temperature changes this patent discloses an arrangement in which the spiral spring is replaced by a wire, the upper end of which is carried by a balance beam brought to the horizontal position by means of a counterweight.

Claims allowed - 3.

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(392) DREHWAAGE NACH EÖTVÖS
(Torsion balance according to Eötvös)

Dr. Stefan Rybar of Budapest.

458,354 Patent issued April 4, 1928.

This patent describes a torsion balance according to Eötvös with a photographic registering device. The improvement concerns an arrangement by which the sensitive plates are secured below the measuring pendulum.

Claims allowed - 3.

(393) EINRICHTUNG ZUM EINSTELLEN DES AZIMUTS BEI DREHWAAGEN
(Device for adjusting the azimuth at the torsion balances)

Gebrüder Haff Ges. m. b. H. of Pfronten-Ried.

458,555 Patent issued April 13, 1928.

To adjust a torsion balance to various azimuths, ordinary stop screws or a ring provided with cuttings are generally used. This requires troublesome operation if, for example, five azimuths instead of three are to be taken. This disadvantage is according to this patent removed by applying two or several rings provided with cuttings which are fixed to a tube and can be displaced in vertical direction.

Claims allowed - 2.

(394) DREHWAAGE NACH EÖTVÖS
(Torsion balance according to Eötvös)

Dr. Karl Kilchling of Freiburg i. Br.

458,556 Patent issued April 13, 1928.

This patent describes an arrangement by which the torsion-balance box is suspended to a holder by a wire, thus making its special adjustment to horizontal position by means of levels unnecessary.

Claims allowed - 3.

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(395) DREHWAAGE ZUM MESSEN KLEINER GRAVITATIONS KRÄFTE
(Torsion balance for measuring small gravity forces)

"Exploration" Boden-Untersuchungs-und Verwertungs-G. m. b. H.
of Berlin.

463,128. Patent issued July 24, 1928.

According to this invention one of the two weights of the balance is secured to a rigid rod directed upward, the other weight remaining as usual at the end of the balance beam. By this arrangement the total height of the instrument is considerably reduced.

Claims allowed - 2.

(396) DREHWAAGE ZUM MESSEN KLEINER GRAVITATIONS KRÄFTE
(Torsion balance for measuring small gravity forces)

(Addition to patent 463,128)

"Exploration" Boden-Untersuchungs-und Verwertungs-G. m. b. H.
of Berlin.

463,673 Patent issued July 31, 1928.

This patent discloses a further improvement of the original patent 463,128, which is characterized by lowering the center of gravity of the system by securing a special weight below the center of the balance beam. This arrangement makes it possible to reduce still more the total height of the balance.

Claims allowed - 2.

(397) DREHWAAGE FÜR GRAVIMETRISCHE UNTERSUCHUNGEN
(Torsion balance for gravimetrical investigations)

Ervand Kogbetliantz of Paris.

467,248 Patent issued November 13, 1928.

This patent discloses a torsion balance provided with three beams secured at equal angles one to another and suspended to a common wire.

Claims allowed - 3.

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(398) DREHWAAGE ZUR MESSUNG VON SCHWERKRAFTS-UNTERSCHIEDEN
(Torsion balance for measuring gravity variations)

"Exploration" Boden-Untersuchungs-und Verwertungs-G. m. b. H. of Berlin.

467,704 Patent issued October 29, 1928.

The torsion balance described in this patent is constructed so that the two horizontal bars, to which the weights are secured are connected one with another by a vertical cross arm. This cross arm is suspended to the wire directly or by means of a lateral additional piece. The connecting arm can be made from a tube and the suspension wire placed inside of the tube; the center of gravity can be lowered by fixing a special weight to the connecting arm or to the lower arm.

Claims allowed - 5.

(399) DREHWAAGE
(Torsion balance)

Askania-Werke A.-G. vormals Centralwerkstatt-Dessau und Carl Bamberg-Friedenau of Berlin-Friedenau.

478,359 Patent issued June 24, 1929.

This patent discloses an improvement of the invention described in the original patent 456,039. The improvement concerns the annihilation of the effect of the magnetic remanence upon the brake copper after the closing of the circuit by which the results of the measurements are influenced.

Claims allowed - 4.

(400) VORRICHTUNG ZUR ANBRINGUNG VON BASISLINIEN AUF DEN PHOTOGRAMMEN WÄHREND DER PHOTOGRAPHISCHEN REGISTRIERUNG BEI DREHWAAGEN

(Device for drawing base lines on photograms obtained in torsion balances during photographic recording)

Gebrüder Haff G. m. b. H. of Pfronten-Ried.

480,443 Patent issued October 17, 1929.

The device for drawing base lines on photograms is characterized by securing a special immovable lever, provided with a sharp point. By means of light pressure the point is pressed against the photographic surface and draws on it, owing to the movement of this surface, a fine line.

Claims allowed - 1.

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(401) DREHWAAGE MIT ZWEI GEHÄNGEN
(Torsion balance with two suspensions)

"Exploration" Boden-Untersuchungs und Verwertungs-G. m. b. H. of Berlin.

482,886 Patent issued September 26, 1929.

The invention described in this patent concerns the arrangement by which the two beams of the torsion balance form one with another an angle of 90° or of nearly 90°.

Claims allowed - 1.

2. MAGNETIC METHODS.

(402) ERDMAGNETISCHES VERTIKAL-INTENSITÄTS-VARIOMETER
(Earth magnetic vertical-intensity variometer)

Otto Töpfer und Sohn, of Potsdam.

152,489 Patent issued June 21, 1904.

The patent involves a vertical-intensity variometer in which the magnet system, which is placed in the inclination line, is brought to a certain, for example, normal, position by the torsion of one or several horizontal filaments or wires.

Claims allowed - 1.

(403) VORRICHTUNG ZUM SCHUTZ DER AUF TORSION BEANSPRUCHTEN ACHSEN BEI MESSINSTRUMENTEN, INSBESONDERE FÜR ERDMAGNETISCHE BEOBACHTUNGEN GEGEN SCHNELLE TEMPERATURSCHWANKUNGEN

(Arrangement for protecting axles of measuring instruments based on torsion, especially those used for earth-magnetic observations, against quick changes of temperature)

"Erda" A.-G. of Göttingen.

411,093 Patent issued March 10, 1925.

According to the invention described in this patent, the influence of quick changes of temperature upon the wire or fibre used as a torsion axis is lessened by an arrangement in which such axes are surrounded with oil or similar poor heat conducting liquid.

Claims allowed - 1.

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(404) INSTRUMENT ZUR MESSUNG SÄMTLICHER BESTIMMUNGSGRÖSSEN DES ERDMAGNETISCHEN FELDES

(Instruments for measuring the values of all the components necessary for determining the earth-magnetic field)

"Erda" A.-G. of Göttingen.

415,872 Patent issued July 2, 1925.

The instrument described in this patent serves for measuring the values of all the components necessary for determining the earth-magnetic field; it is characterized by an arrangement in which a magnetic needle, rotatable around a vertical axis, and serving for measuring the horizontal intensity and declination, is fixed above or below the magnetic vertical-intensity field balance in such a manner that the distance between the magnetic needle and the beam of the field balance can be adjusted.

Claims allowed - 2.

(405) VERFAHREN ZUR ANSCHAULICHEN WIEDERGABE VON MAGNETISCHEN FELDMESSUNGEN

(Method for apparent representation of magneti field measurements)

"Erda" A.-G. of Göttingen.

421,899 Patent issued November 20, 1925.

This patent describes a method of representing by small sticks the relation to each other of vectors of disturbance calculated for each point from measured values; these small sticks, by which the established values and directions are represented, are put at those points of the map or of the plastic model of the region under investigation which correspond to the points of observation on the terrain.

Claims allowed - 1.

(406) LOKALVARIOMETER FUR MAGNETISCHE KRAFTFELDER

(Local variometers for magnetic fields)

Dr. Hans Haalck of Berlin-Steglitz.

426,772 Patent issued March 18, 1926.

The localvariometer for magnetic fields disclosed in this patent is characterized by an arrangement in which two or more coils, of equal area of turn are fixed and connected at different places of a common rotation axis

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in such a way that their areas of turn lie in the same plane and are directed parallel to the rotation axis, and that the alternating currents produced in them during the rotation have opposite directions. The coils are moved by means of a driving device.

Claims allowed - 2.

(407) VERFAHREN ZUR FESTSTELLUNG GERINGER LAGERVERÄNDERUNGEN VON KÖRPERN IM BEREICH VON KRAFTFELDERN

(Method for determining small changes of position of bodies within the range of fields of force)

Dr.-Ing. Heinrich Quäring of Falkensee b. Spandau.

437,365 Patent issued November 16, 1926.

Method for determining small changes of positions of bodies, for example of a plumb line, within the fields of force is characterized by the following: In order to determine the electrical, magnetic, or any other physical potential variation, or variation of oscillation caused by the change of the position of the body, the circuit which serves for measuring the change of the capacity, or of the oscillation, is closed only for a short period by utilizing the inertia of the measuring device and after this device is adjusted to the new position of equilibrium.

Claims allowed - 1.

(408) MAGNETISCHES INSTRUMENT
(Magnetic instrument)

Ernst Ruhstrat of Göttingen.

440,899 Patent issued February 17, 1927.

This patent discloses a magnetic instrument, with two magnetic needles oscillating horizontally, for measuring the horizontal intensity in which two directing magnets are secured one above the upper needle and the other below the lower needle; the force of these magnets is calculated so that one needle is kept in a direction opposite to the earth's field and the other in the direction of the earth's field; the two needles are thus each in a weak field, of almost equal force but opposite direction, which is composed from the earth's field and directing field.

Claims allowed - 1.

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(409) MAGNETISCHE WAAGE
(Magnetic balance)

Dr. Hans Haalck of Berlin-Steglitz.

441,171 Patent issued February 21, 1927.

The invention concerns a magnetic balance by which the measurements of the vertical intensity as well as of declination can be made with an accuracy equal to that of instruments generally used. The beam of the balance described in this patent consists of two or more magnetic systems crossing one another by any angle; the oscillation plane of the beam is made rotatable so that the adjustment of the balance beam to the zero position is possible.

Claims allowed - 1.

(410) VARIOMETER FÜR HORIZONTAL UND VERTIKALINTENSITÄT
(Variometer for horizontal and vertical intensity)

Ernst Ruhstrat of Göttingen

455,437 Patent issued February 1, 1928.

This invention concerns the development of the horizontal variometer with two magnetic needles. By this development the measuring of the vertical intensity is made possible also. Operating the apparatus is simplified besides.

Claims allowed - 2.

(411) MAGNETISCHES MESSINSTRUMENT
(Magnetic measuring instrument)

Ernst Ruhstrat of Göttingen

455,438 Patent issued April 5, 1928.

This patent discloses a development of the original patent 440,899 in which instead of two directing magnets only one is used. The directing magnet may be replaced by a coil through which a circuit produced by an adjustable direct current of a fixed direction and strength passes.

Claims allowed - 1.

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(412) VORRICHTUNG ZUR VERKLEINERUNG DES TEMPERATUREIN-FLUSSES BEI MAGNETISCHEN WAAGEN

(Arrangement for diminishing the influence of temperature in magnetic balances)

"Exploration" Boden-Untersuchungs-u. Verwertungs-G. m. b. H. of Berlin.

471,228 Patent issued January 30, 1929.

The invention for diminishing the influence of the temperature concerns an arrangement by which the reducing of the magnetic moment in case of the increase of the temperature is compensated in a simple way. This compensation is obtained by the displacement of the center of gravity of the balance beam closer to the point of support of the balance beam.

Claims allowed - 1.

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